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Alexander Buchan.

Kinnesswood, 11th April, 1829—Edinburgh, 13th May, 1907.

The death of the leading British meteorologist deprives our science of one of the few survivors of the great formative period of modern meteorology, and takes from the workers in that subject an honoured master and a trusty friend. We, ourselves, owe much to the example and teaching of Dr. Buchan in observing and discussing the records of meteorological instruments, and more to the constant inspiration of his example and his kindly encouragement.

Alexander Buchan was born in Kinnesswood, Kinross, on 11th April, 1829, and was educated at the Free Church Normal School, in Edinburgh, and afterwards at the University, where he took the degree of M.A., in 1864. From 1848 onwards he followed the profession of a teacher, for which indeed he was naturally gifted, and throughout his life he retained the power of imparting instruction easily and pleasantly. As a schoolmaster he filled appointments at Banchory, Blackford, and lastly at Dunkeld. But for a weakness in the throat that continued to trouble him through life he might never have relinquished the profession he had chosen.

The Scottish Meteorological Society was founded in 1856, but though its early records give full particulars of the qualifications, appointment and withdrawal of several successive secretaries, curiously enough nothing is said in the published minutes of the appointment of Mr. A. Buchan, who read his first paper as Meteorological Secretary at the meeting of 11th April, 1861. The subject was "The cold weather of the previous Christmas." It is interesting to observe that even at this early period he treated the problem in a distinctly geographical manner, and he called attention to a fact, the importance of which he often referred to afterwards, the remarkable difference in the distribution of low temperatures according to the configuration of the surrounding land surface.

It was the custom for the Council of the Scottish Meteorological Society at that time, and for many years afterwards, to select a certain subject for investigation and report by the Meteorological Secretary, whose studies were thus guided by a body of learned and sagacious men of science and affairs. Guided in this way from 1861 onwards, Dr. Buchan was nearly as much the author as the

editor of the Journal of the Scottish Meteorological Society, the "new series" of which was started in 1862. It was the period of most rapid advance in meteorology, the principles of the synoptic weather chart, of the relation of wind direction to the isobars, and of scientific forecasts of the weather for short periods had just been enunciated, and thanks, in part to the early interest of Mr. D. Milne Home, of Milne Graden, in the Dutch weather forecasting experiments, and in part to the enthusiasm with which Buchan took the matter up in those early years, the name of Buys Ballot and the extension of the relation between barometric gradient and wind direction were soon thoroughly familiar in this country. In 1867 he published his "Handy Book of Meteorology," a second edition of which appeared in the following year. This book showed so firm a grasp of the principles of the science, and so thorough a mastery of observational detail, that it became the standard text-book in the language; and in later years many appeals were made to the author to bring it up to date. The increasing volume of official work and the burden of various important researches was such that the appeals had to be made in vain. Following on the larger work an "Introductory Textbook of Meteorology" was issued in 1871.

In 1869 Mr. Buchan read to the Royal Society of Edinburgh the paper by which his reputation as a leader in meteorology was established at once and for ever throughout the world. It dealt with the difficult and baffling problem of charting the mean distribution of atmospheric pressure and prevailing winds over the globe. This paper was perhaps the most fruitful, though it was far from being the most laborious piece of work which Dr. Buchan accomplished. A natural result was that on the return of the *Challenger* expedition in 1876, the vast mass of meteorological data accumulated in every part of the world was handed over to Dr. Buchan to report upon. He was able to prepare as the basis of his "Report on Atmospheric Circulation," published in 1889, maps of the world representing the mean temperature, and also the mean barometric pressure and wind directions for every month as well as for the year. These were prepared in pairs for each month, one map showing the whole world on a projection modified from Mercator's, the other showing the northern hemisphere down to about latitude 30° N., on a much larger scale. His last work on terrestrial meteorology was the editorship of the volume on Meteorology in Bartholomew's great "Physical Atlas," in which he was aided by Dr. A. J. Herbertson.

Climatology, that department of meteorology which is equally a department of geography, always claimed the lion's share of Dr. Buchan's attention. He worked as much with maps as with tables of figures, and it is to his patient labours that we are indebted for the first discussion of the monthly distribution of pressure and temperature over the British Isles. The subject frequently attracted

him in later years, and there are several valuable papers dealing with it in his "Journal."

The relation of climate to disease occupied his attention, and was dealt with in several papers written jointly with Sir Arthur Mitchell, one of the founders of the Scottish Meteorological Society.

In 1883 two important enterprises engaged the attention of Dr. Buchan and the other leading men interested in the study of natural phenomena in Edinburgh; one of these was the establishment of the Scottish Marine Station at Granton; and the other was the foundation of the observatory on the summit of Ben Nevis, and subsequently of a second observatory at Fort William. For the remainder of his life the meteorology of Ben Nevis unquestionably held the first place in Dr. Buchan's scientific work. He took his share in the efforts to awaken public interest and secure the necessary funds to start the observatories, and to carry them on, and he put forth more energy than was perhaps prudent from the point of view of health in the effort to persuade an indifferent Government to place the work on a permanent basis. Many references have been made in this Magazine to the unsuccessful struggle to secure public money for the maintenance of the Ben Nevis observatories, and we do not propose to dwell on it now. Dr. Buchan's old friend and colleague on Ben Nevis, Mr. R. T. Omond, has kindly sent a valuable note on the subject.

While Dr. Buchan was particularly associated throughout his long and active life with the scientific activity of Scotland, and of Edinburgh in particular, he was also well known in London, where he had a place on several important representative bodies. For many years he was the representative of the Royal Society of Edinburgh on the committee, nominated for the most part by the Royal Society of London, for the administration of the Government grant of £4000 per annum for scientific research. In 1887 he was appointed a member of the Meteorological Council, the body which, on the responsibility of the Royal Society of London, directed the Meteorological Office and administered the sum set apart by Parliament for the meteorological service of the country. He became a Fellow of of the Royal Society in 1898. Dr. Buchan frequently attended the meetings of international committees, and was on terms of personal friendship with all the leading continental meteorologists.

When the Symons Memorial Gold Medal was founded, the Royal Meteorological Society made the first award to Dr. Buchan as the most eminent British meteorologist.

Dr. Buchan received the honorary degree of LL.D. from the University of Glasgow in 1887. He was a member of the Council of the Royal Society of Edinburgh for nearly forty years, and he received in turn the Makdougall Brisbane and the Gunning prizes of the Society. In connection with the Edinburgh Royal Society Club, Dr. Buchan shone in a sphere with which many to whom he was familiar in the streets and in his office never associated him,

as purveyor of intellectual gaiety of the old Scottish type. As a host Dr. Buchan was always charming, and his breakfasts on the occasion of such meetings as those of the British Association are not to be forgotten by any one who had the privilege of taking part in them. The first Meteorological Breakfast at the British Association was given by Mr. D. Milne Home in 1871, and the function was continued by Mr. Symons for several years. When we revived the Meteorological Breakfast at Glasgow in 1901 we were fortunate in securing Dr. Buchan as chairman, and on that occasion he gave a short speech full of the memories of the great exponents of meteorology who had graced those meetings in the past.

We cannot close these notes without a tribute to the memory of Miss Jessie Hill Buchan, the faithful niece and invaluable assistant who worked for so many years in the office with her uncle.

In private life Dr. Buchan was full of surprises to those who expect to find a student of science a man of one idea. He took a deep interest in church matters, and was an elder in Free St. George's. He revelled in poetry, especially in the old Scottish ballads, from which on suitable occasions he could produce singularly apt quotations, and his knowledge of literature was remarkable when one remembers the laborious and engrossing nature of his never-ceasing work.

DR. ALEXANDER BUCHAN AND THE BEN NEVIS OBSERVATORIES.

By R. T. Omond.

When the Meteorological Observatory on Ben Nevis was established as a permanent station with resident observers in 1883, Dr. Buchan drew up the scheme of observations, which was adhered to throughout the whole time the Observatory was in existence as a scientific institution. With characteristic thoroughness he insisted on the necessity of a complete hourly record of the chief meteorological elements—such as pressure, temperature, wind, rainfall, etc.—even though it were necessary to get these by "eye" readings when self-recording instruments would not work. As the ever growing record of these observations came in, he dealt with them in the same systematic and masterly manner which in former years he had shown in his great discussions of the atmospheric pressures and temperatures of the world.

The foundation of this work was his comparison of the barometric pressure on the summit of Ben Nevis with that at sea level, first for general average values and then for individual hourly readings from day to day. This was quite a new method of treating high level observations, and has not I believe been carried out elsewhere except to some extent in respect to the high level stations in India. It is a

method which can only be used for fixed mountain stations; the barometric traces got from kites and balloons are useless for such a discussion because with them the exact height above sea level of the instrument recording the pressure is not known. He showed the intimate connection between pressure and temperature at the high and low level stations and how this varied with the weather conditions at the two places. Some of the results of his investigations are given in the appendices to the volumes of Ben Nevis observations in the Transactions of the Royal Society of Edinburgh, but these papers were only introductory; Dr. Buchan hoped to be able to develop this line of research further, but it was not so to be, and the future investigation of the Ben Nevis record must be carried on by others building on the foundations laid by Dr. Buchan.

THE TEMPERATURE OF JUNE, 1907.

It is possibly some small compensation for enduring so inclement a period as the past spring and early summer, that the meteorologist should experience the mild excitement afforded by the comparison of his observations with those of previous years, and entertain the reasonable expectation of being able to establish a new "record" to carry down into the future.

During the month of June the British Isles came under the influence of a series of shallow depressions advancing from the Atlantic in a north-easterly direction, and following one another in rapid succession. Except in the north of Scotland there was, in consequence, an unusual tendency towards westerly and south-westerly winds, which were constantly accompanied by cloudy skies and frequent rain. The temperature for the month was below the average everywhere in the United Kingdom, falling short on the whole by about 2°·5. The deficiency increased fairly uniformly from east to west in Great Britain, exceeding 3° in the western half of Scotland, the whole of Wales, and many parts of the west of England. The most serious deficiencies occurred in the western Highlands and in the south of Wales, where the mean temperature was probably more than 4° in defect over considerable areas. Only in the extreme east of Great Britain and north of Scotland did the temperature rise to within 2° of the average, and several coast stations in Yorkshire and East Anglia approached to within 1° of the normal.

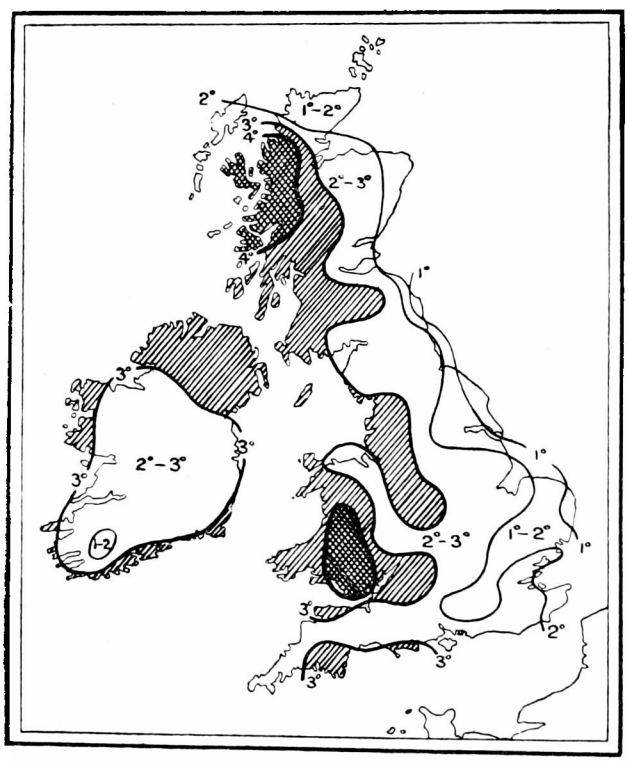
In Ireland the general temperature was about 3° below the average; the inland stations were comparatively less cold than the coast stations. At Killarney only was the deficiency less than 2°.

The map which is reproduced herewith shows by the increasingly dark shading the increasingly low temperatures in June, expressed by the number of degrees below the average for each locality.

During the first week practically no instances of shade maxima exceeding 70° were reported in the British Isles, and at a large

majority of stations the average maximum failed to reach 60°. The minima were on the whole less remarkable, and only fell below 40° in Scotland and a few stations in the north of England. The temperature was normal or slightly above the average during the second week, but the day temperatures were in most places remarkably moderate. The last fortnight was everywhere extremely cold, with no maxima exceeding 70°, and a considerable number of instances of ground frost. The lowest shade minimum reported was 32° at Balmoral.

TEMPERATURE OF JUNE, 1907.
NUMBER OF DEGREES BELOW THE AVERAGE



The shaded area had a deficiency of more than 3°, the cross shaded area more than 4°.

The temperature conditions in London, although sufficiently noteworthy to call for comment, were less severe than in most parts of the Kingdom, and the table below of the readings at Camden Square shows that the mean temperature has been lower in June on 6 occasions during the past half century. It should be noted that the extremes quoted for the Glaisher screen are not strictly comparable with observations taken in the standard Stevenson screen in use at

the majority of observing stations. The readings in the Stevenson screen are therefore added, but the Glaisher screen readings alone are compared with averages.

Temperature at Camden Square, June, 1907.

	June, 1907.	Difference from Aver., 1858-1897.	Number of times lower, 1858-1906.
	°	°	
Mean Shade Max. .....(Glaisher)...	67·0	—4·3	3
,, ,, ,, ...(Stevenson)	65·9	...	...
,, ,, Min. .....(Glaisher)...	50·4	—0·5	17
,, ,, ,, ...(Stevenson)	51·5	...	...
,, ,, Temp. .....(Glaisher)...	58·0	—2·4	6
Extreme Shade Max. .....(,,)...	78·0	—5·1	7
,, ,, ,, ...(Stevenson)	75·6	...	...
,, ,, Min. .....(Glaisher)...	43·9	+2·1	40
,, ,, ,, ...(Stevenson)	45·2	...	..
,, Sun Max. (black)	123·8	—5·7	...
,, Grass Min.	39·9	+3·1	...

THE DINNER OF THE ROYAL METEOROLOGICAL SOCIETY.

THE annual dinner of the Society was held in the Trocadero Restaurant, on the evening of Tuesday, 18th June, Dr. H. R. Mill, President, in the chair. There were present about ninety gentlemen, including a number of distinguished guests. The company included the Norwegian Minister, Dr. Fridtjof Nansen, the Right Hon. Sir George Taubman Goldie, President of the Royal Geographical Society, Sir Richard Douglas Powell, Bart., President of the Royal College of Physicians, Sir Richard Biddulph Martin, Bart., Prime Warden of the Fishmongers' Company, Sir Norman Lockyer, K.C.B., Sir Thomas Elliott, K.C.B., Secretary to the Board of Agriculture, Sir John Murray, K.C.B., Sir Lauder Brunton, Professor Otto Pettersson, of Stockholm, Hon. W. Pember Reeves, High Commissioner for New Zealand, Professor J. Perry, Mr. E. H. Shackleton of the British Antarctic Expedition, Dr. J. Scott Keltie, Mr. J. Wrench Towse, Mr. Günther, Mr. A. Watt, Secretary of the Scottish Meteorological Society, Mr. R. A. Gregory, Dr. C. Theodore Williams, Mr. F. Campbell Bayard, Mr. H. Mellish, Dr. R. H. Scott, Captain D. Wilson-Barker, Mr. Richard Bentley, Mr. W. Ellis, Dr. W. N. Shaw, Captain Campbell Hepworth, Mr. D. W. Freshfield, Mr. Baldwin Latham, Mr. F. Druce, Rev. H. A. Boys, Major B. Baden-Powell, Rev. Wm. Esdaile, Mr. R. G. K. Lempfert, Mr. J. A. Curtis, Mr. R. H. Curtis, Captain Clarke, Mr. R. Inwards, Mr. Harries, and Mr. W. Marriott.

During the evening songs of appropriate character were interspersed with the speeches, the musical arrangements being under the personal direction of Mr. H. Schartau. Amongst the songs were "The Stormy Winds do Blow," "The Rain it raineth every day," "Haste ye Soft Winds to my relief," and "The long day closeth." A flash-light photograph was taken in the course of the evening.

After the Royal toasts had been honoured, Dr. Nansen proposed "The Royal Meteorological Society," in an eloquent speech, in which he laid stress on the lofty ideal which should be kept in view by every scientific society, the pursuit of knowledge for its own sake, irrespective of its immediate utility. The Chairman, in responding, said that the Society was prosperous and growing in numbers, harmonious in its domestic relations between Fellows and Council, and fraternally disposed towards co-operation with all other bodies pursuing kindred studies. While the main aim of the Society was always the advancement of the science of meteorology, the humbler needs of the applications of the science to the affairs of the fisherman, farmer, and the general public, were not ignored.

Dr. C. Theodore Williams, Treasurer of the Society, proposed "Kindred Institutions," referring to the large number of interests with which meteorology came in contact. Sir George Goldie replied on behalf of other learned societies, dwelling on the close kinship between meteorology and geography. Dr. W. N. Shaw, Director of the Meteorological Office, replied on behalf of official meteorologists. He paid a graceful tribute to the services to science of the late Dr. Buchan, and to the fruitful labours of such veteran workers as Sir Richard Strachey and Mr. Francis Galton, and he did not forget the great army of volunteer observers who accumulate the data for specialists to study.

Mr. Richard Bentley proposed "The Visitors," referring to the wide range of the Earth from which they had come, from the close neighbourhood of the north pole and of the south, and to the vast variety of the interests—all kindred to the science of the weather—which they represented. Sir John Murray, of the *Challenger* expedition, and Sir Thomas Elliott, replied, the latter expressing the keen appreciation of the relation between meteorology and agriculture felt by the Board of Agriculture and Fisheries.

The toast of "The Chairman," proposed by Mr. F. Campbell Bayard, and briefly acknowledged, terminated the proceedings.

It was felt generally that the dinner had passed off pleasantly, and the distinguished visitors being scattered amongst the Fellows and not concentrated together, as is not unusual on such occasions, the body of the Fellows present was able to play its part of host, and to enjoy to the full the society of the guests.

Correspondence.

To the Editor of Symons's Meteorological Magazine.

SUMMER SNOW AND FROST: CLIMATIC VAGARIES.

COL. CHRYSTIE'S note of snow on June 3rd, at Farnham, Surrey, reminds us of some past experiences suggesting that there is no month of the year in which snow and frost are not possible in England.

On July 11th, 1888, in the early morning a few flakes of snow fell at Bristol, and the newspapers stated that on the same morning at Shepton Mallet, Somerset, the ponds were covered with a thin coating of ice! For the day named I recorded a mean temperature of 49°, the minimum at 4 ft. being 40°·5 and there was a slight grass frost.

In the Registrar General's Reports snow was stated to have fallen heavily in 1888 on the night of June 10th, in Scotland, the depth being 6 inches. On July 10th snow was observed at Keswick, and on July 11th snow showers occurred in north and east Derbyshire where the weather was so bad that the harvest had to be suspended.

During the very inclement summer of 1879, snow fell on July 4th and 8th at Bolton and on July 9th at Cockermouth. In 1883, on July 15th snow fell at Whitchurch; other instances might be quoted.

Looking back through my old meteorological records I find some interesting evidence as to the vagaries of our climate. Thus on July 14th, 1876 and July 11th, 1888, I registered mean temperatures of 50°·6 and 49°·0, whereas on December 28th, 1876 and December 6th, 1889, I obtained 55°·0 and 54°·9.

The great heat of the summer of 1876 was terminated on Saturday, August 19th, by very heavy thunderstorms which occurred during the afternoon and night. At 9 a.m. on August 20th I measured 3·570 inches of rain in my gauge. Yet, after the intense heat of previous weeks there was a slight frost on the grass here on the early morning of August 25th in some situations, though my terrestrial radiation thermometer did not fall below 32°·6.

At Ashley Down, Bristol, where nearly all my observations were taken, I found May frosts, often very severe. Thus on May 5th, 1877, the shade minimum was 26°·8, and the grass minimum 20°·4.

On March 19th, 1867, and March 15th, 1887, snow lay on the ground here to the depths of 13 and 16 inches respectively. Yet March 16th, 1884 was a perfectly summerlike day, with a maximum temperature of 67°.

W. F. DENNING, F.R.A.S.

Bishopston, Bristol, June 19th, 1907.

P.S.—The *Daily Mail* of June 27th contained the following:—

"There was the unique experience last evening, June 26th, of a snow and hail storm of nearly an hour's duration on the eastern range of the Lammermoor Hills, which for a short time were almost totally mantled in white."—W. F. D.

RAPID FORMATION OF FOG AND GLOOM.

I SUSPECT that a bank of London smoke was the cause of the phenomenon described on p. 53. I have several times seen the same phenomenon here when the wind has been from the direction of London, though this place is 36 miles off as against Epsom's 16.

ALFRED O. WALKER.

Ulcombe Place, 17th April, 1907.

THE DRY FIRST QUARTER OF 1907.

IN an unbroken period of 21 years of meteorological work here, I have had no precedent of such a dry three months as January, February and March; rain only falling on 28 days out of the 90, with a total of 3·16 in., being a little below the half of the average amount. This is true even though February, 1890, had only rain on 6 days, and February, 1891, none at all. W. G. MACHIN.

Hartley Wintney.

MAXIMUM AND MINIMUM TEMPERATURES.

THE kind of difficulty mentioned by Mr. H. E. Wood, p. 72, in your May issue, is, I consider, a still greater one as regards the minimum temperature. I think the maximum temperature ought to be recorded somewhere about the usual time of minimum, and the minimum somewhere about the usual time of maximum. The general practice with regard to the maximum is sufficiently near this; but many observers record the minimum at 8 or 9 a.m., which in winter in this country is not far from the usual time of minimum, the result being that one minimum is often recorded twice over, which seems unfair. 1 or 2 p.m. would be much fairer for recording the minimum.

T. W. BACKHOUSE.

West Hendon House, Sunderland, 8th July, 1907.

MARCH AND JUNE.

IT may be of interest to note that on March 31st I recorded a maximum reading of 70°·1, the highest in March in my 24 years' record, and apparently the highest recorded in London for 50 years.

The temperature in the month of June just past has only risen to 70° on one day. The absolute maximum (74°·9) and the mean maximum (64°·4) are both the lowest yet recorded here in 24 years, though the mean temperature was a trifle lower in 1903.

The great thunderstorm on the 29th, when 1·22 in. was measured, raised the total rainfall to 2·92 in., otherwise it would have been under average, in spite of the dull and showery weather that has prevailed.

G. VON U. SEARLE.

30, Edith Road, West Kensington, W., 6th July, 1907.

THE INTERMITTENT SUNSHINE OF JUNE, 1907.

IT may possibly be of interest to observe, as characteristic of the month just past, that the total sunshine measured here in June, 170 hours 42 minutes (about 25 hours less than the average), was recorded in upwards of three hundred *separate* traces. There are indications of a still larger number, but those traces which impinge on each other without a distinct interval have not been taken into account. The measurement was by the Campbell-Stokes recorder.

RICHARD BENTLEY.

Upton, Slough, Bucks, July 1st, 1907.

THE COLD JUNE OF 1907.

THE wettest and coldest June I can remember has just come to an end with 5·42 in. of rain falling on 25 days. The heaviest fall was ·84 in. on the 22nd, with thunder and hail. The maximum shade temperature was 65° on the 8th, 11th and 17th; the minimum 39° on the 25th. The thermometer reached 60° on only 15 days. Thunder occurred on the 10th, 12th, 22nd and 28th. The prevailing direction of the wind was S.W. to S.E.

HENRY B. MURRAY.

Ardnaveigh, Antrim, July 1st, 1907.

A FEW facts about the weather experienced at Buxton, the highest meteorological station in England, during June, 1907, might be of interest to observers at stations of lower altitude.

The rainfall amounted to 8·10 in., and is the second highest on record, being only exceeded by the fall in 1882, which amounted to 8·42 in. The average rainfall for June is 3·42 in., so that this year's fall is more than double the average. Rain fell on no fewer than 27 days, this constituting a new record; the previous one being 25 days, in June, 1879.

The total duration of bright sunshine, as registered by a Jordan Sunshine Recorder, was 133·2 hours—38·2 hours below the average. During the month five days had no sunshine whatever, and five had under an hour.

The mean temperature was 3°·6 below the average, being 51°·0. The maximum temperature for the month was registered on the 9th, 69°·1, and, with the exception of June 20th, 1879, is the lowest maximum temperature for the month ever experienced in June. Freezing point was not reached once, either in the screen or on the ground.

Severe thunderstorms occurred on the 5th and 9th and thunder alone was heard on the 30th.

FREDK. T. KEILDSEN, JUN.

Lismore House, Buxton, Derbyshire, July 2nd, 1907.

THE following table gives particulars of rainfall and temperature from the writer's observations for the month of June at Belper, Derbyshire, where the rainfall during the 30 years, 1877-1906, exceeded that of June, 1907, on eight occasions :—

	Rainfall in June. in.	Total from Jan. 1—June 30. in.	No. of Rain Days.	TEMPERATURE. Mean max.	Mean min.	Mean.
				°	°	°
1879 ...	6·21	19·24	25	62·3	49·0	55·6
1892 ...	5·09	14·31	18	63·3	47·0	55·2
1891 ...	4·82	15·26	12	64·4	49·4	56·9
1900 ...	4·49	18·31	17	66·3	50·3	58·3
1882 ...	4·13	18·42	19	62·1	47·0	54·6
1883 ...	3·91	15·16	14	63·9	48·0	56·0
1897 ...	3·82	17·91	12	66·8	50·9	58·8
1880 ...	3·58	12·47	17	63·0	48·0	55·5
1907 ...	3·42	14·24	22	60·8	47·6	54·2

Comparison of the Actual Records for June, 1907, with the Means for 30 Years, 1877—1906 :—

	June, Mean 30 years, 1877-1906.	June, 1907.
Rainfall, inches	2·56	3·42
Rain from Jan. 1—June 30	14·10	14·24
Days on which rain fell.....	13	22
Mean temp.	57°·0	54°·2

JOHN HUNTER, A.M.I.C.E., F.R.Met.Soc.

Belper, July 1st, 1907.

TEN "SUMMER" DAYS.

THE ten days ending July 8th, 1907, give the following average temperatures :

9 a.m. temp.....	53°·6	Max. in Stevenson screen..	57°·4
Grass thermometer.....	38°·0	Min. ,, ,, ,, ...	42°·3
One foot below the surface..	52°·7	Mean ,, ,, ,, ...	49°·8
Two feet ,, ,, ...	52°·2	Rainfall, 1·05 inches on 8 days.	

This is by far the most arctic weather we have experienced here in summer since my register began in 1878 ; I have taken out the ten individually coldest days that have occurred in July since that year, and find the mean 49°·5, or only 0°·3 lower than the ten *consecutive* days just passed.

The mean temperature of June, 1907, is less (53°·2) than any year during the same period, while the number of rain days (25) is the greatest, though the rainfall has twice been slightly exceeded.

For the quarter ending June we have had 70 rain days out of 91, with 13·39 inches of rain, an excess of 59 per cent. above the average ; also unequalled for a quarter of a century.

CHARLES L. BROOK.

Harewood Lodge, Meltham, July 10th, 1907.

THE RELATION BETWEEN THE WEATHER OF SPRING AND OF THE FOLLOWING SUMMER.

IT is a familiar saying that "a bushel of March dust is worth a king's ransom." The meaning apparently is that with a dry March we may expect a bountiful season. Such a season generally implies, I suppose, a fine, hot summer. We may then usefully compare March, wet or dry (rainfall over or under average), with the heat of the following summer. This heat may be measured by the number of "hot days," or days with a maximum of 80° or more. Of these there are 15 in the year on an average at Greenwich, and the numbers have ranged from 0 up to 40. We take the 66 years, 1841—1906.

It appears that a dry March is followed about equally often by a hot and by a cool summer. But on comparing the hot summers after dry Marches with those after wet Marches, the former are seen to be both more numerous (19 to 9), and to run oftener into higher figures. Consider these two facts :—

1. The five hottest summers of all (hot days in each case over 28) were each preceded by a dry March.

2. Of the 19 hottest summers (20 to 40 hot days), 16 were preceded by a dry March.

I may say that 17 of these 19 were also dry. (In our summers heat and dryness generally go together; in winters, heat and wet. Spring and autumn, being transitional, seem to be neutral in this respect.)

May not a perception of some such relations as the above have been at the genesis of the practical saw about March dust?

The relations of spring and summer are variously interesting. Thus, a cold and wet spring is rarely followed by a hot summer. I find that out of 14 such springs, only 2 were so followed; the hot days then numbering 21 and 17 respectively (average 15). The opposite case (of warm and dry springs) is less pronounced, and the two remaining possible cases seem to be neutral.

With a spring rainfall of 6 inches or more (average 5·1 in.), the prospect of a hot summer would appear to be extremely small.

The seasonal conditions of a good wheat harvest are being ably elucidated by Dr. Shaw. In a recent paper to the *Journal of Agricultural Science* (January, 1907), dealing with 22 years' experience in east England, he considers (from average results) that "a good wheat yield is preceded by a dry and warm autumn, a rather dry and warm winter, a rather wet and cold spring, and a dry and slightly warm summer."

ALEX. B. MACDOWALL.

REVIEWS.

Gesammelte Abhandlungen aus den Gebieten der Meteorologie und des Erdmagnetismus von WILHELM VON BEZOLD. *In Gemeinschaft mit* A. COYM *herausgegeben vom Verfasser. Mit 66 Abbildungen im Text und 3 Tafeln.* [*Collected Memoirs relating to Meteorology and Terrestrial Magnetism, by* WILHELM VON BEZOLD. *Edited by the Author with the co-operation of* A. COYM.] Braunschweig: Friedrich Vieweg und Sohn. 1906. Size 10 × 7. Pp. viii. + 448.

THE last work of the author was the preparation of what is always the best memorial of a man of science—a selection of his best work gathered in from the scattered media of publication, revised and where necessary supplemented by his own hand. To the student it is no small advantage to have between two boards, or, to be exact, between paper covers, a set of memoirs which would otherwise have to be sought for individually through many volumes of Transactions all of which are to be found only in a very few libraries. Indeed, the author allows in his preface that he acceded to the request of the publishers largely because his more strictly scientific works were so difficult of access that they were scarcely known except in the form of inadequate abstracts.

There are altogether twenty papers reproduced in the volume, sixteen relating to meteorology and four to terrestrial magnetism. The former, with dates of publication and number of pages are:—

Observations on Twilight. (1864, pp. 34).

On regular variations in the frequency of thunderstorms. (1874, pp. 25).

On an approximately 26-day periodicity in thunderstorms. (1888, pp. 11).

On the increase in the danger from lightning during the last 60 years. (1899, pp. 12, with supplement, 1906, pp. 8).

On the Thermodynamics of the Atmosphere. Part I. (1888, pp. 37).

Ditto. Part II. Potential Temperature. Vertical Temperature Gradient. Compound Convection. (1888, pp. 17).

Ditto. Part III. Mixing of Air. Formation of Cloud and Precipitation. (1890, pp. 39).

Ditto. Part IV Supersaturation and Over-cooling. Thunderstorm formation. (1892, pp. 32).

Ditto. Part V. The climatological importance of the study of ascending and descending air-currents. (1900, pp. 5).

Theoretical considerations on the results of scientific ballooning. . . . . (1900, pp. 44).

On the working up of the humidity data obtained by balloons. 1894, pp. 9).

On the temperature changes in ascending and descending air-currents. (1898, pp. 10).

On the Theory of Cyclones. (1890, pp. 22).

On the representation of pressure distribution by pressure surfaces and by isobars (1901, pp. 10).

The exchange of heat on the Earth's surface and in the atmosphere. (1892, pp. 41).

On climatological means for whole parallels of latitude. (1901, pp. 14).

METEOROLOGICAL NEWS AND NOTES.

A SPECIAL ASSISTANT is required in the Meteorological Office whose duties will be mainly with scientific investigation. He will be expected, in the first instance, to carry out investigations with reference to forecasts of weather, and he must be prepared to attend at the Office from the morning hours of observation at the reporting stations (8 a.m. or possibly 7 a.m.) when required. He will also be called upon for some secretarial work, and for assistance as regards University lectures, or in other ways at the Director's discretion. The appointment will date from October 1st, 1907, and will be in the first instance, for a year on probation at a salary of £250. An adequate knowledge of physics (theoretical and experimental) as well as of mathematics is essential. Applications, with references, should be addressed to the Director, Meteorological Office, 63, Victoria Street, S.W.

PROFESSOR W. J. VAN BEBBER has, we are informed, retired from his position as Departmental Head in the Deutsche Seewarte at Hamburg.

THE INTERNATIONAL COUNCIL FOR THE STUDY OF THE SEA met this year in London, during the week from June 9th to 15th. The meetings of the constituent committees took place in the rooms of the Royal and Linnean Societies; the formal meetings of the Council were in the Foreign Office. It was decided to carry on the international co-operation for one year more, to July, 1908, and to prepare a comprehensive report on the hydrographical, biological and statistical work accomplished in the five years of the Council's activity. His Majesty the King received the Council and experts at Buckingham Palace, on the afternoon of the 14th. Lord Carrington, President of the Board of Agriculture and Fisheries, and Mr. Sinclair, Secretary for Scotland, gave dinners, and so did the Lord Mayor, the Worshipful Company of Fishmongers, and the Royal Geographical Society and Geographical Club. On the 15th Dr. and Mrs. H. R. Mill gave a garden party, with some novel features, at Mill Hill, and the meeting terminated with a lunch in Christ's College, Cambridge, at the invitation of Mr. A. E. Shipley, Chairman of the Council of the Marine Biological Association.

A NOVELIST'S OBSERVATION on rainfall measurement was brought to our notice the other day by a German professor whose habits of wide reading lead him far beyond his native language. The reference is to Anthony Hope's "Dolly Dialogues":—

"By Jove!" remarked Archie, coming up behind us, pipe in mouth, "there was a lot of rain last night. I've just measured it in the gauge."

"Some people measure everything," said I, with a displeased air. "It is a detestable habit."

TEMPERATURE FOR JUNE, 1907.

STATION.	COUNTY.	Lat. N.	Long. W. [*E.]	Height above Sea. ft.	TEMPERATURE. Max. °	Max. Date.	Min. °	Min. Date.	No. of Nights at or below 32° Shade.	Grass.
Camden Square	*London*	51 32	0 8	111	78·0	9	43·9	17	0	0
Tenterden	*Kent*	51 4	*0 41	190	73·5	9	41·5	17	0	0
West Dean	*Hampshire*	51 3	1 38	137	76·0	17	41·0	17, 30	0	...
Hartley Wintney	,,	51 18	0 53	222	74·0	9†	38·0	17¶	0	...
Hitchin	*Hertfordshire*	51 57	0 17	238	...	...	...	...	...	...
Winslow (Addington)	*Buckinghamshr.*	51 58	0 53	309	74·0	9	42·0	17¶	0	0
Bury St. Edmunds (Westley)	*Suffolk*	52 15	*0 40	226	73·0	9	39·5	17	0	...
Brundall	*Norfolk*	52 37	*1 26	66	73·8	9	44·0	7	0	0
Winterbourne Steepleton	*Dorset*	50 42	2 31	316	...	...	...	...	...	...
Torquay (Cary Green)	*Devon*	50 28	3 32	12	64·9	16	45·0	29	0	0
Polapit Tamar [Launceston]	,,	50 40	4 22	315	63·9	4	37·5	29	0	0
Bath	*Somerset*	51 23	2 21	67	73·0	9	43·0	29	0	...
Stroud (Upfield)	*Gloucestershire*	51 44	2 13	226	73·0	9	46·0	2	0	...
Church Stretton (Woolstaston)	*Shropshire*	52 35	2 48	800	71·5	9	32·0	3	1	...
Coventry Kingswood	*Warwickshire*	1 30	52 24	340	73·0	9	42·0	2	0	...
Boston	*Lincolnshire*	52 58	0 1	25	75·0	9	46·0	3	0	0
Worksop (Hodsock Priory)	*Nottinghamshire*	53 22	1 5	56	74·6	9	39·1	30	0	2
Derby (Midland Railway)	*Derbyshire*	52 55	1 28	156	...	..	...	...	...	...
Bolton (Queen's Park)	*Lancashire*	53 35	2 28	390	73·9	9	40·6	25	0	0
Wetherby (Ribston Hall)	*Yorkshire, W.R.*	53 59	1 24	130	...	...	...	...	...	...
Arncliffe Vicarage	,, ,,	54 8	2 6	732	...	...	...	...	...	...
Hull (Pearson Park)	,, *E.R.*	53 45	0 20	6	71·0	9	40·0	4	0	...
Newcastle (Town Moor)	*Northumberland*	54 59	1 38	201	...	...	...	...	...	...
Borrowdale (Seathwaite)	*Cumberland*	54 30	3 10	423	71·6	9	40·3	29	0	...
Cardiff (Ely)	*Glamorgan*	51 29	3 13	53	...	...	...	...	...	...
Haverfordwest (High Street)	*Pembroke*	51 48	4 58	95	65·1	...	40·0	...	0	...
Aberystwyth (Gogerddan)	*Cardigan*	52 26	4 1	83	76·0	5	35·0	28	0	...
Llandudno	*Carnarvon*	53 20	3 50	72	75·0	9	44·0	30	0	...
Cargen [Dumfries]	*Kirkcudbright*	55 2	3 37	80	71·0	9	39·0	30	0	...
Lilliesleaf (Riddell House)	*Roxburgh*	55 31	2 46	550	...	..	...	...	...	...
Edinburgh (Royal Observy.)	*Midlothian*	55 55	3 11	442	64·2	17	39·7	4	0	0
Girvan (Pinmore)	*Ayr*	4 49	55 10	207	66·0	30	36·0	30	0	...
Glasgow (Queen's Park)	*Renfrew*	55 53	4 18	144	63·0	10	39·0	24	0	3
Tighnabruaich	*Argyll*	55 55	5 14	50	66·0	17, 29	36·0	24	0	...
Mull (Quinish)	,,	56 36	6 13	35	70·0	17	...	...	...	...
Dundee (Eastern Necropolis)	*Forfar*	56 28	2 57	199	71·8	17	35·0	4	0	...
Braemar	*Aberdeen*	57 0	3 24	1114	...	...	...	...	...	...
Aberdeen (Cranford)	,,	57 8	2 7	120	63·0	8‡	36·0	3, 24	0	...
Cawdor (Budgate)	*Nairn*	57 31	3 57	250	...	...	...	...	...	...
Invergarry	*E. Inverness*	57 4	4 47	130?	...	...	...	...	...	...
Loch Torridon (Bendamph)	*W. Ross*	57 32	5 32	20	...	...	...	...	...	...
Dunrobin Castle	*Sutherland*	57 59	3 56	14	63·0	11	37·5	4	0	...
Castletown	*Caithness*	58 35	3 23	100	70·0	9	36·0	19	0	0
Killarney (District Asylum)	*Kerry*	52 4	9 31	178	66·0	8, 20	40·0	17	0	...
Waterford (Brook Lodge)	*Waterford*	52 15	7 7	104	64·5	26	...	...	...	...
Broadford (Hurdlestown)	*Clare*	52 48	8 38	167	66·0	7§	41·0	30	0	...
Abbey Leix (Blandsfort)	*Queen's County*	52 56	7 17	532	66·0	7, 17	...	...	...	...
Dublin (Fitz William Square)	*Dublin*	53 21	6 14	54	65·2	14	43·0	25	0	0
Ballinasloe	*Galway*	53 20	8 15	160	72·0	13	36·0	29, 30	0	...
Clifden (Kylemore House)	,,	53 32	9 52	105	...	...	...	...	...	...
Crossmolina (Enniscoe)	*Mayo*	54 4	9 18	74	...	...	...	...	...	...
Seaforde	*Down*	54 19	5 50	180	72·0	12	39·0	3	0	...
Londonderry (Creggan Res.)	*Londonderry*	54 59	7 19	320	...	...	...	...	...	...
Omagh (Edenfel)	*Tyrone*	54 36	7 18	280	...	...	...	...	...	...

† and 10, 11. ‡ and 19, 27, 28. § and 11 14. ‖ and 29, 31. ¶ and 29, 30.

RAINFALL FOR JUNE, 1907.

RAINFALL OF MONTH.							RAINFALL FROM JAN. 1.					
Aver. 1870-99.	1907.	Diff. from Av.	% of Av.	Max. in 24 hours.		No. of Days	Aver. 1870-99.	1907.	Diff. from Aver.	% of Av.	Mean Annual 1870-1899.	STATION.
in.	in.	in.		in.	Date.		in.	in.	in.		in.	
2·09	2·03	— ·06	97	·46	1	19	10·63	10·04	— ·59	94	25·16	Camden Square
1·96	1·69	— ·27	86	·28	11	14	11·55	10·16	— 1·39	88	28·36	Tenterden
2·02	1·23	— ·79	61	·35	12	17	12·61	10·75	— 1·86	85	29·93	West Dean
1·89	2·25	+ ·36	119	·61	5	18	11·59	11·48	— ·11	99	27·10	HartleyWintney
1·89	2·03	+ ·14	107	·39	30	20	10·26	11·00	+ ·74	107	24·66	Hitchin
1·99	2·29	+ ·30	115	·70	1	22	11·28	11·12	— ·16	99	26·75	Addington
2·04	2·00	— ·04	98	·26	6	18	10·32	12·21	+ 1·89	118	25·39	Westley
1·89	2·91	+1·02	154	·51	1	16	10·12	13·57	+ 3·45	134	25·40	Brundall
2·32	2·96	+ ·64	128	·61	11	20	16·36	14·91	— 1·45	91	39·00	Winterbourne Stpltn
2·13	1·65	— ·48	77	·50	11	18	15·05	13·20	— 1·85	88	35·00	Torquay
2·12	2·43	+ ·31	115	·48	11	25	15·45	15·71	+ ·26	102	38·85	Polapit Tamar
2·31	2·39	+ ·08	103	·41	24	23	13·03	12·12	— ·91	93	30·75	Bath
2·23	2·73	+ ·50	122	·61	10	20	12·83	11·35	— 1·48	88	29·85	Stroud
2·46	4·13	+1·67	168	·45	5	22	14·31	14·86	+ ·55	104	33·04	Woolstaston
2·41	2·41	·00	100	·59	11	21	12·56	12·14	— ·42	97	29·21	Coventry
1·94	1·50	— ·44	77	·25	24	13	9·76	9·59	— ·17	98	23·30	Boston
2·24	2·16	— ·08	96	·53	11	21	10·81	10·37	— ·44	96	24·70	Hodsock Priory
2·70	3·25	+ ·55	120	·42	30	24	11·48	13·11	+ 1·63	114	26·18	Derby
3·21	7·84	+4·63	245	1·11	5	28	16·75	22·74	+ 5·99	136	42·43	Bolton
2·38	3·07	+ ·69	129	·55	11	23	11·63	13·06	+ 1·43	112	26·96	Ribston Hall
3·69	7·72	+4·03	209	·85	5	27	26·47	33·06	+ 6·59	125	60·96	Arncliffe Vic.
2·12	3·02	+ ·90	143	·84	15	20	11·24	12·30	+ 1·06	109	27·02	Hull
2·03	2·19	+ ·16	108	·39	20	20	11·35	11·94	+ ·59	105	27·99	Newcastle
6·97	17·04	+10·07	244	1·99	4	29	57·36	63·18	+ 5·82	110	132·68	Seathwaite
2·53	3·91	+1·38	155	·38	10	24	17·19	16·80	— ·39	98	42·81	Cardiff
2·61	4·87	+2·26	187	1·28	4	25	19·67	18·92	— ·75	96	47·88	Haverfordwest
2·93	6·20	+3·27	212	·70	24	25	17·59	21·05	+ 3·46	120	45·41	Gogerddan
2·00	2·90	+ ·90	145	·33	20	23	12·18	10·56	— 1·62	87	30·98	Llandudno
2·68	6·66	+3·98	249	·91	4	24	18·75	24·29	+ 5·54	130	43·43	Cargen
2·44	...	...	...	...	...	..	13·88	..	...	...	33·04	Riddell House
...	2·41	..	...	·39	9	21	...	10·15	...	...	...	Edinburgh
2·95	6·75	+3·80	229	1·41	4	28	20·52	...	...	...	48·87	Girvan
2·70	4·04	+1·34	150	·58	30	24	14·94	18·98	+ 4·04	127	35·80	Glasgow
3·76	6·02	+2·26	160	·67	26	25	24·65	28·77	+ 4·12	117	57·90	Tighnabruaich
3·55	3·48	— ·07	98	·41	23	28	23·84	24·93	+ 1·09	105	57·53	Quinish
2·15	4·20	+2·05	195	·60	12	26	12·09	14·00	+ 1·91	116	28·95	Dundee
2·44	2·69	+ ·25	110	...	...	...	14·94	15·80	+ ·86	106	36·07	Braemar
2·09	3·72	+1·63	178	·43	12	22	13·69	14·96	+ 1·27	109	33·01	Aberdeen
2·24	4·52	+2·28	202	1·10	1	20	11·92	15·47	+ 3·55	130	29·37	Cawdor
2·85	4·84	+1·99	170	·75	26	18	24·72	31·62	+ 6·90	128	56·00	Invergarry
4·78	9·41	+4·63	197	1·02	19	30	36·04	50·26	+14·22	140	86·50	Bendamph
2·14	4·89	+2·75	228	·68	1,24	19	13·45	18·54	+ 5·09	138	31·60	Dunrobin Castle
...	3·96	...	...	·58	24	25	...	16·86	...	...	...	Castletown
3·29	3·21	— ·08	98	·44	25	26	25·99	18·98	— 7·01	73	58·11	Killarney
2·61	4·36	+1·75	167	·62	4	23	17·19	15·58	— 1·61	91	39·30	Waterford
2·52	3·65	+1·13	145	·43	29	27	14·12	16·10	+ 1·98	114	33·47	Hurdlestown
2·43	3·63	+1·20	149	·35	8	26	15·20	15·67	+ ·47	103	35·19	Abbey Leix
1·95	2·84	+ ·89	146	·50	4	27	11·88	12·33	+ ·45	104	27·75	Dublin
2·69	4·21	+1·52	157	·73	4	26	15·92	17·76	+ 1·84	112	37·04	Ballinasloe
5·33	6·33	+1·00	119	·77	20	26	34·29	31·03	— 3·26	90	80·23	Kylemore House
2·95	5·60	+2·65	190	·75	19	28	21·74	26·13	+ 4·39	120	50·50	Enniscoe
2·72	5·63	+2·91	207	1·09	22	26	16·92	20·62	+ 3·70	122	38·61	Seaforde
2·92	5·31	+2·39	182	·56	8	28	17·07	25·90	+ 8·83	152	41·20	Londonderry
2·88	...	...	...	...	...	...	15·86	...	...	...	37·85	Omagh

SUPPLEMENTARY RAINFALL, JUNE, 1907.

Div.	STATION.	Rain inches	Div.	STATION.	Rain. inches
II.	Abinger Hall	2·14	XI.	Rhayader, Tyrmynydd	5·00
,,	Ramsgate	1·22	,,	Lake Vyrnwy	7·82
,,	Hailsham	2·30	,,	Llangyhanfal, Plâs Draw	2·46
,,	Crowborough, Uckfield Lodge	3·04	,,	Criccieth, Talarvor	4·71
,,	Totland Bay, Aston House	1·35	,,	Llanberis, Pen-y-pass	20·90
,,	Emsworth, Redlands	2·61	,,	Lligwy	4·72
,,	Alton, Ashdell	2·93	,,	Douglas, Woodville	4·71
,,	Newbury, Welford Park	3·80	XII.	Stoneykirk, Ardwell House	5·74
III.	Harrow Weald, Hill House.	2·10	,,	Dalry, The Old Garroch	5·91
,,	Oxford, Magdalen College	2·94	,,	Langholm, Drove Road	7·68
,,	Bloxham Grove	2·73	,,	Moniaive, Maxwelton House	5·01
,,	Pitsford, Sedgebrook	2·18	XIII.	N. Esk Reservoir [Penicuick]	3·45
,,	Huntingdon, Brampton	1·44	XIV.	Maybole, Knockdon Farm	3·76
,,	Wisbech, Bank House	1·44	XV.	Campbeltown, Witchburn	4·34
IV.	Southend Water Works	1·80	,,	Inveraray, Newtown	6·46
,,	Colchester, Lexden	1·77	,,	Ballachulish House	7·33
,,	Newport, The Vicarage	1·82	,,	Islay, Eallabus	4·22
,,	Rendlesham	1·96	XVI.	Dollar Academy	6·27
,,	Swaffham	2·27	,,	Loch Leven Sluice	5·14
,,	Blakeney	1·86	,,	Balquhidder, Stronvar	6·64
V.	Bishops Cannings	2·59	,,	Perth, Pitcullen House	4·66
,,	Ashburton, Druid House	3·71	,,	Coupar Angus Station	3·75
,,	Okehampton, Oaklands	3·88	,,	Blair Atholl	3·25
,,	Hartland Abbey	3·01	,,	Montrose, Sunnyside Asylum	4·56
,,	Lynmouth, Rock House	3·47	XVII.	Alford, Lynturk Manse	3·96
,,	Probus, Lamellyn	2·97	,,	Keith Station	6·56
,,	Wellington, The Avenue	2·24	XVIII.	N. Uist, Lochmaddy	3·99
,,	North Cadbury Rectory	2·36	,,	Alvey Manse	3·27
VI.	Clifton, Pembroke Road	3·23	,,	Loch Ness, Drumnadrochit.	4·08
,,	Ross, The Graig	2·13	,,	Glencarron Lodge	7·03
,,	Shifnal, Hatton Grange	2·71	,,	Fearn, Lower Pitkerrie	3·10
,,	Cheadle, The Heath House.	4·17	XIX.	Invershin	3·11
,,	Blockley, Upton Wold	2·97	,,	Altnaharra	3·53
,,	Worcester, Boughton Park.	2·38	,,	Bettyhill	3·56
VII.	Market Overton	2·35	XX.	Dunmanway, The Rectory	5·90
,,	Market Rasen	3·01	,,	Cork	3·53
,,	Bawtry, Hesley Hall	...	,,	Darrynane Abbey	4·64
VIII.	Neston, Hinderton Lodge	3·04	,,	Glenam [Clonmel]	3 88
,,	Southport, Hesketh Park	5·92	,,	Ballingarry, Gurteen	3·19
,,	Chatburn, Middlewood	8·10	,,	Miltown Malbay	4·02
,,	Cartmel, Flookburgh	8·32	XXI.	Gorey, Courtown House	4·04
IX.	Langsett Moor, Up. Midhope	6·27	,,	Moynalty, Westland	4·72
,,	Scarborough, Scalby	3·00	,,	Athlone, Twyford	3·83
,,	Ingleby Greenhow	2·97	,,	Mullingar, Belvedere	3·74
,,	Mickleton	3·58	XXII.	Woodlawn	5·00
X.	Bardon Mill, Beltingham	2·92	,,	Westport, Murrisk Abbey	...
,,	Ewesley, Fallowlees	...	,,	Collooney, Markree Obsy.	5·50
,,	Ilderton, Lilburn Cottage	2·94	,,	Mohill	5·00
,,	Keswick, York Bank	6·73	XXIII.	Enniskillen, Portora	5·91
XI.	Llanfrechfa Grange	4·43	,,	Warrenpoint, Summer Hill.	4·51
,,	Treherbert, Tyn-y-waun	11·20	,,	Banbridge, Milltown	4·31
,,	Carmarthen, The Friary	4·41	,,	Belfast, Springfield	5·73
,,	Castle Malgwyn [Llechryd].	4·06	,,	Bushmills, Dundarave	4·97
,,	Plynlimon	1·53	,,	Stewartstown, The Square	4·71
,,	Crickhowell, Ffordlas	5·00	,,	Killybegs	...
,,	New Radnor, Ednol	4·64	,,	Horn Head	4·61

METEOROLOGICAL NOTES ON JUNE, 1907.†

ABBREVIATIONS.—Bar. for Barometer; Ther. for Thermometer; Temp. for Temperature; Max. for Maximum; Min. for Minimum; T for Thunder; L for Lightning; TS for Thunderstorm; R for Rain; H for Hail; S for Snow.

LONDON, CAMDEN SQUARE.—An extremely ungenial and harsh month with an abnormal amount of cloud and great want of warmth and sunshine. The R, although falling on an excessive number of days, was normal in amount. Mean temp. 58°·0, or 2°·4 below the average. Duration of sunshine 146·5* hours, and of R 31·0 hours.

CROWBOROUGH.—Gloomy, cold and unseasonable, with great absence of sunshine, and persistent cold W. and S.W. winds throughout. The mean temp., 53°·7, was 3°·5 below the average and 1°·1 below that of June, 1903, which was in many respects similar. R ·56 in. above the average; there were not three consecutive days without R. TSS on 1st and 9th.

TOTLAND BAY.—The windiest and coldest June in 21 years. Total wind movement 8,805 miles, and mean temp. 55°·0 Duration of sunshine 175·3* hours, or 36·0 hours below the average.

TORQUAY.—Duration of sunshine 167·1* hours, or 62·2 hours below the average. Mean temp. 55°·7, or 2°·9 below the average. Mean amount of ozone 5·4.

NORTH CADBURY.—A terrible month, cold, showery, cloudy and excessively windy, with not one calm day. The max. temp. was by far the lowest yet recorded in June, but the min. was only slightly below the average. R only ·04 in. above, but rain days more than double, the average of 10 years.

BOLTON.—Enormous R, 3·02 in. in excess of the previous highest fall in June. The pressure, duration of sunshine and temp. were the lowest in 21 years. Mean temp. 51°·2, or 4°·3 below the average. Duration of sunshine 88·3* hours, or 66·6 hours below the average. Wind practically always S. or W.

SOUTHPORT.—R 3·76 in., and rain days 11, above the average of 35 years and the greatest in that period. Mean temp. 54°·7, or 2°·6 below the average. Duration of sunshine 150* hours, being 70 hours below the average. Duration of R 90·8 hours.

HAVERFORDWEST.—Cold, wet and stormy throughout, being the wettest June since 1882. Duration of sunshine 159·1* hours.

DOUGLAS.—The coldest June of which there is any record, the mean temp. being 4°·1 below the average. That of the last fortnight was much below that of the first. The R had been slightly exceeded twice in 33 years, but the duration of sunshine only in 1897, which, however, was far warmer.

GIRVAN.—By far the wettest and coldest June in 33 years.

STRONVAR.—Very wet and cold. All growth was at least a fortnight later than can ever be remembered in this district.

COUPAR ANGUS.—The mean temp., 51°·9, was the lowest in 27 years, and the R the heaviest in that period except in 1897.

LOCHMADDY.—R about double the average, and only twice approached during 23 years. The number of rain days was the highest ever recorded.

DRUMNADROCHIT.—R 2·08 in., and rain days 11, above the average of 25 years. The R was once exceeded, but the rain days never. It was altogether cold, cheerless and boisterous, without sunshine.

DUNMANWAY.—Very wet, cold and unlike June. In some places potato blight began about the middle of the month. TS on 23rd with H stones as large as small marbles.

CORK.—Mean temp. the lowest in June for 25 years, that of 1902 being the same. R ·77 in. above the average.

MILTOWN MALBAY.—Colder and with less sunshine than last November. Fierce N.W. gales, eternal R and H prevailed till the end.

DUBLIN.—A more inclement June than that of the memorable year of 1879, establishing records for low temp., high wind and frequency of R. Mean temp. 55°·9, or 2°·1 below the average. TSS on 10th and 24th.

† See also p. 107. * Campbell-Stokes.

Climatological Table for the British Empire, January, 1907.

STATIONS. (*Those in italics are South of the Equator.*)	Absolute. Maximum. Temp.	Date.	Absolute. Minimum. Temp.	Date.	Average. Max.	Min.	Dew Point.	Humidity. 0-100	Absolute. Max. in Sun.	Max. on Grass.	Total Rain. Depth.	Days.	Aver. Cloud.
	°		°		°	°	°		°	°	inches		
London, Camden Square	51·4	1	22·1	24	43·1	34·1	35·5	87	73·7	19·7	·91	8	...
Malta	...	...	...	...	...	...	...	...	...	...	...	...	...
Lagos	90·0	29	70·0	17	87·5	76·7	72·9	78	150·0	67·0	1·10	4	7·9
Cape Town	98·2	31	52·5	15	78·1	60·6	56·5	64	...	...	·57	4	2·6
Durban, Natal ...	90·7	6	63·2	12	82·8	68·4	...	...	153·6	...	3·02	22	5·7
Johannesburg	78·4	3	52·0	22	72·9	56·0	57·4	81	161·9	51·1	7·22	22	5·9
Mauritius	88·5	21	66·0	20	85·0	70·0	67·2	73	153·0	60·4	1·70	20	6·2
Calcutta...	86·6	28	52·1	2, 3	80·0	57·7	57·4	68	138·6	45·3	·00	0	1·1
Bombay	88·9	1	66·3	11	84·9	70·4	65·9	70	136·3	56·9	·00	0	0·6
Madras	...	...	...	.	...	...	...	...	...	...	...	...	...
Kodaikanal	70·4	28	40·8	15	62·8	46·3	42·3	66	128·9	19·9	·97	4	3·6
Colombo, Ceylon ...	90·4	1	69·6	26	87·5	72·6	70·8	78	150·8	66·8	·83	7	3·5
Hongkong	75·0	1	45·0	31	66·3	57·0	51·4	69	129·9	...	3·45	7	4·4
Melbourne	95·6	18	49·9	10	76·0	57·0	53·7	71	151·2	39·5	1·10	4	5·4
Adelaide	106·3	18	50·0	29	82·5	59·0	52·4	53	159·8	45·8	·10	2	2·9
Coolgardie	104·2	26	47·9	19	87·6	59·1	48·8	42	172·2	45·0	·23	5	2·2
Sydney	88·0	6	59·8	11	78·5	65·0	60·4	66	129·4	52·8	2·69	20	7·1
Wellington	80·2	9	46·0	19	69·7	58·1	54·0	70	139·0	37·0	3·34	8	5·0
Auckland	84·0	28	50·0	19	73·2	61·8	58·0	72	147·0	43·0	7·45	12	5·6
Jamaica, Negril Point.	90·9	14	61·0	31	84·8	67·0	66·0	74	...	...	·89	5	...
Trinidad	...	...	...	...	...	...	...	...	...	...	...	...	...
Grenada	85·2	30	67·8	29, 30	81·6	71·2	71·5	81	146·0	...	2·54	18	3·7
Toronto	51·4	20	-10·0	24	28·3	15·7	21·4	86	57·0	-13·9	2·32	6	7·9
Fredericton	47·5	20	-21·2	17	20·1	-1·5	...	74	...	...	·94	4	5·3
St. John's, N.B. ...	48·5	1	-17·0	17	25·9	7·2	...	...	...	...	1·32	5	5·4
Victoria, B.C.	48·2	21	14·8	15	37·6	28·9	...	...	...	...	2·64	10	6·5
Dawson	20·0	13	-59·0	20	-15·2	-30·9	...	..	...	...	·00	0	6·4

Johannesburg.—Bright sunshine 53 per cent. of possible amount.

Mauritius.—Mean temp. of air 2°·2, dew point 3°·0, relative humidity 2·5 per cent., and R 5·55 in. below, averages. Mean hourly velocity of wind 7·8 miles, or 2·1 below average.

KODAIKANAL.—Bright sunshine 249 hours.

COLOMBO.—Mean temp. of air 79°·3 or 0°·2 above, of dew point 0°·8 above, and R 2·73in. below, averages. Mean hourly velocity of wind 8·5 miles.

HONGKONG.—Mean temp. of air 61°·4. Bright sunshine 195·8 hours, or 55 hours above average. Mean hourly velocity of wind 12·4 miles.

Adelaide.—Mean temp. of air 3°·3 below, and R ·76 in. below, averages.

Sydney.—Mean temp. of air 0°·2 above, and R ·79 in. below, averages.

Wellington.—Mean temp. of air 63°·9 or 1°·1 above, and R ·12 in. below averages.

Auckland.—Excessively wet and stormy from 9th to 16th; 2·15 in. of R fell on 14th and 1·82 in. on the 15th, and 7·08 in. between the above dates. The total for the month, 7·45 in., was the largest for January ever recorded here.